

IMPEDIMENTS TO YOUTH PARTICIPATION IN HUNTING: A PROGRESS REPORT AND EVALUATION OF PROGRAM DEVELOPMENT EFFORTS

by

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PROGRESS REPORT

STATE: NEW YORK

PROJECT: W-146-R:13

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STUDY NUMBER AND TITLE: VII- Evaluation of Participation and Satisfaction in
Wildlife-related Activities

JOB NUMBER AND TITLE: VII-9 - Overcoming the Attitudinal and Informational
Impediments to Hunting Faced by Youngsters

JOB OBJECTIVE: To assist DEC, through program design and evaluation activities,
in overcoming the impediments to hunting participation by
youngsters that are susceptible to change by DEC's sportsmen's
education programs.

JOB DURATION: 1 July 1986 - 30 June 1989

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**IMPEDIMENTS TO YOUTH PARTICIPATION IN HUNTING:
A PROGRESS REPORT AND EVALUATION OF PROGRAM DEVELOPMENT EFFORTS**

INTRODUCTION

This report is a follow-up of the Pomerantz and Decker (1986) progress report - *Impediments to Youth Participation in Hunting*. This report has 4 purposes: (1) to provide information on the theoretical support and empirical evidence for factors that influence an individual's decision to participate in hunting, (2) to summarize progress thus far in the development of a Department of Environmental Conservation (DEC) program to diminish impediments to youth participation in hunting, (3) to outline the evaluation strategy the Human Dimensions Research Unit (HDRU), Cornell University will follow to evaluate the program, and (4) to present a preliminary evaluation of program development thus far.

Hunting participation in New York has declined in recent years. Enrollment in the New York State Hunter Training Courses (HTCs), which account for most of the new hunters entering the state's hunting population, decreased about 45% from 1981 to 1987. Hunting license sales decreased also. The sale of New York State resident small game hunting licenses declined about 20% from 1971 to 1985. Although the sale of big game hunting licenses increased until 1982, sales have decreased about 7% since then (Brown et al. 1987).

The declining trend in hunting participation is likely to continue without programmatic intervention from DEC. Brown et al. (1987) investigated the relationship of several demographic, economic, and biological factors to sales of hunting licenses in New York State. They reported that many of the factors found to correlate with an increase in the sale of hunting licenses are not likely to increase in the future. Conversely, factors that were found to be correlated with a decrease in the sale of hunting licenses will likely increase in the future.

In addition to those types of factors investigated by Brown et al. (1987), personal factors that affect whether an individual participates in hunting may be

changing as well. These personal factors (psychological and sociological) are affected by an individuals' experiences and may influence, or possibly change, an individual's beliefs, values, and habits (Decker et al. 1987). In New York such things as increasing urbanization which has diminished the understanding of rural cultures and traditionally rural activities, increasing popularity of outdoor recreational pursuits that are alternatives to hunting, and the increasingly-organized anti-hunting movement are examples of factors that are likely to influence negatively an individual's decision to hunt.

Several concerns arose about the decrease in hunting participation in New York.

Two concerns were paramount:

- (1) Hunting license sales represent much of the financial base for DEC's wildlife management activities. The decline in hunting license sales has potential to impact greatly the ability of DEC to continue to provide current levels of services, recreational benefits, and control of wildlife populations.
- (2) Many persons who have shown an interest in hunting by attending a HTC have not continued to participate in hunting for some reason(s) (Purdy and Decker 1986). Nonparticipation by those with an expressed interest in hunting might be indicative of an unnecessary limiting of the opportunities for persons to enjoy the wildlife resources of New York State.

These concerns led DEC to consider a program to address the decrease in hunting participation. DEC has expressed interest in initially developing a pilot program to be implemented in a limited geographic area of the State. Of special concern for this pilot program are youths because youths represent about 50% of HTC graduates annually, and they represent the future hunting population of New York. The theoretical support and empirical evidence for factors that influence participation in hunting and that will form the foundation of the pilot program are presented below.

THEORETICAL FOUNDATION FOR THE PILOT PROGRAM

Understanding the theories that describe the processes leading to an individual's decision to participate in hunting will facilitate the development of a sound and effective pilot program. Decker et al. (1984) and Decker and Purdy (1986) have explained the different levels of hunting involvement of HTC participants by using the innovation-adoption process (Figure 1) (e.g., Rogers and Shoemaker 1971). Pomerantz and Decker (1986) discussed how the innovation-adoption process is well-suited as a conceptual model of the process by which hunting is adopted as a recreational activity. This hunting-adoption model indicates that the decision to hunt is rarely spontaneous, but rather is the outcome of a series of decisions occurring at various stages of involvement. The stages range from initial awareness of hunting as a recreational activity, to having an interest in hunting, to actually trying it, and finally to adopting and continuing it as a recreational activity. Inactivity or desertion from the process may occur at any stage, and reentry from a period of inactivity may also occur.

The hunting-adoption theory provides only part of the theoretical framework needed to identify factors most likely to influence whether an individual, especially a youth, participates in hunting. Moral and cognitive development theories discussed in detail by Pomerantz and Decker (1986) are also an important part of the theoretical framework. From these theories, we have identified 2 primary driving concepts for which there is empirical evidence indicating that they influence a youth's decision to participate in hunting. The 2 concepts are apprenticeship experiences and social support.

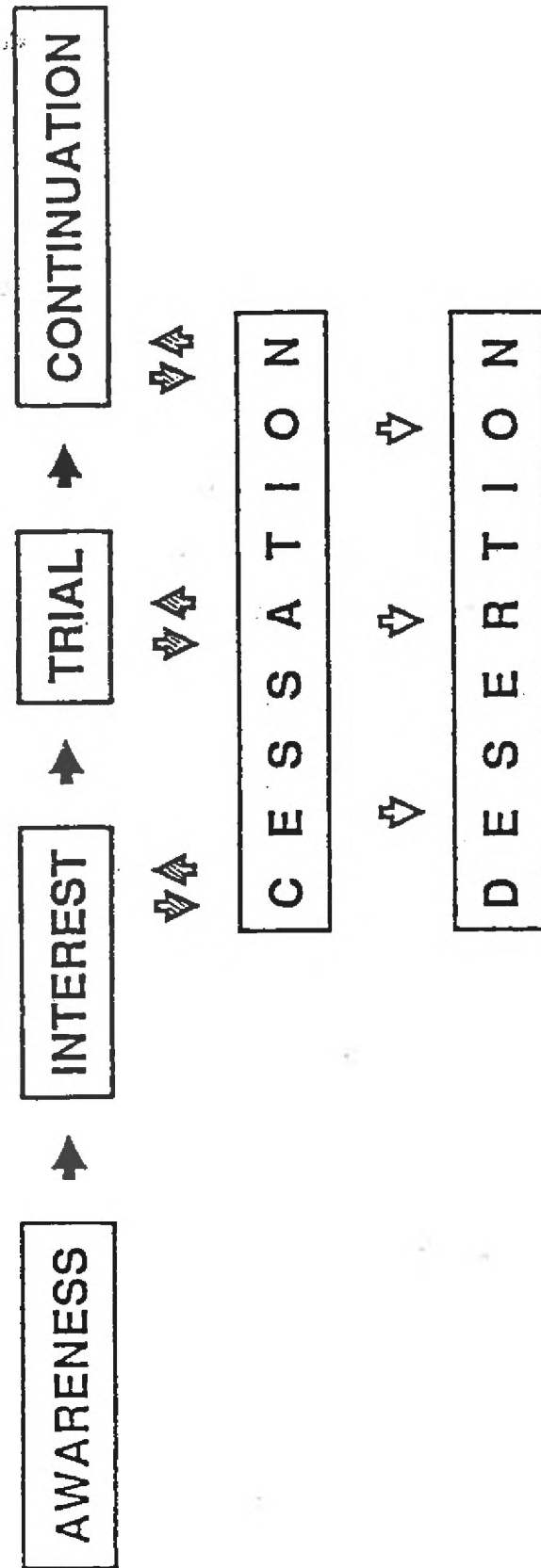


Figure 1. Conceptual model of the process of adopting hunting as a recreational activity (Purdy and Decker 1986).

In the context of the pilot program, the definition of apprenticeship experiences is:

a set of pre hunting (i.e., prior to legal participation in hunting) or early hunting experiences over time with a personally significant person serving as a role model or mentor for hunting.

Apprenticeship experiences encompass several aspects that are important to consider for the development of the pilot program:

- (1) multiple hunting experiences are required
- (2) experiences may or may not include handling firearms
- (3) small maximum group size (e.g., 2 apprentices per master hunter)
- (4) apprenticeship experiences involve the total experience from planning and preparation through the time spent afield to reminiscing about the hunt (including cleaning firearms and game, game meals, etc.)
- (5) development of a role modeling or mentoring relationship
 - (a) pairing of master hunters and apprentices of the same sex
 - (b) development of trusting relationship - may depend on the ability of the mentor
 - (c) assimilation of ethical behavior
 - (d) assimilation of hunting knowledge and skills - See page 8 - repeated
 - (e) identification of amicable "end" to the relationship - certificate recognition
- (6) development of multiple hunting satisfactions (see page 9)

These aspects may be considered to be criteria for program development, and provide standards against which program development can be evaluated. (see p. 8 - values)

Social support is the second driving force which influences an individual's decision to participate in hunting. In the context of the pilot program, the definition of social support is:

familial and peer support of hunting participation indicated by those who positively influence or actually initiate an individual into hunting and expressed through their companionship in or their encouragement for a broad array of hunting activities.

A social support system has a combination of 3 kinds of key people: (1) influencers, (2) initiators, and (3) companions. Influencers include those individuals, both family and nonfamily, whose positive beliefs, values, and attitudes about hunting are

transmitted to other individuals over time and lead to the development of an interest in hunting. Initiators include those family and nonfamily persons who facilitate an individual's entry into hunting. Companions include those who provide camaraderie during activities before and after the hunt as well as during the time spent in the field.

As with apprenticeship experiences, there are several aspects of social support that are important to consider for the development of the pilot program, and against which program development can be evaluated:

- (1) the most effective social support is provided throughout the total experience from planning and preparation through the field experiences to reminiscing about the hunt (including cleaning firearms and game, game meals, etc.).
- (2) include established or specially developed peer support (i.e., friends)
- (3) capture family interest throughout program implementation including planning and reminiscing even if the family does not participate directly in the time spent afield.

Program Model Hypotheses

An examination of the theoretical framework for the factors most likely to influence a person's progression in the hunting-adoption process leads to the following hypotheses:

- (1) A greater proportion of people with apprenticeship experiences than without will be in the continuation stage of hunting adoption.
- (2) Apprenticeship experiences are more effective for younger than older people in getting them to the continuation stage.
- (3) More preadolescent hunters with a family support system will be in the continuation stage of hunting adoption than those without family support.
- (4) More adolescent hunters with a nonfamily support system will be in the continuation stage of hunting adoption than those with a family support system.

- (5) People who have had apprenticeship experiences and have a social support system will be more likely to be in the continuation stage of hunting than those who have only had the apprenticeship but lack support.

Previous studies of factors that promote participation in hunting lend support to these hypotheses and are discussed in the following section. Existing empirical data suggest the importance of hunting experiences combined with age-appropriate social support from family and nonfamily members as key components in the hunting-adoption process. The above hypotheses need to be examined more carefully, however, to determine their relative impact on continued participation in hunting. The establishment and evaluation of a pilot program for hunter education that incorporates these factors will help determine whether innovative management programming can reduce the impediments to continued participation in hunting.

Empirical Evidence of Factors That Promote Continued Participation in Hunting

Apprenticeship experiences

The opportunity to accompany hunters afield prior to legal hunting eligibility is one of the most important factors in the development of hunting interest and levels of participation (Decker and Purdy 1986). Decker et al. (1986) explored the characteristics of pre hunting experiences that appear to be important to the development of an individual's hunting interests. Interviews were conducted with a small sample of HTC graduates and their parents. The parents believed that providing pre hunting experiences was important to the development of their children's hunting interests and abilities. Furthermore, the parents believed that these experiences should be provided before their children were legally able to hunt. The benefits that parents wanted their children to receive from these experiences were diverse and included the acquisition of firearm safety skills, the development of positive values and beliefs about hunting, the development of positive values about environmental

*Need to
want their
children
to be a
part of
the family
tradition*

stewardship, and the strengthening of family relationships. The youth's perceptions of the benefits they obtained from the pre hunting experiences reflected well the expectations of their parents. Most experiences were obtained in multiple (up to 20) outings (repeated experiences) and were associated with small game hunting. Although the experiences were gained most often before the youth's were legally able to hunt (i.e., they did not carry a firearm), they nevertheless believed they had actively participated in the hunt by serving as game spotters or retrievers, or otherwise assisting with the activities.

These pre hunting, apprenticeship experiences also provide an opportunity for the children to be exposed to hunting role models or mentors. Role models are important in the development of hunting values and attitudes of the apprentice. Researchers (e.g., Applegate and Otto 1982, Decker et al. 1984) have suggested that consistent and repeated exposure to a role model's hunting attitudes, knowledge, skills, and ethical behavior, will lead to the assimilation of like attitudes and behavior in the apprentice. Social learning theory maintains that most human learning is rooted in observation, vicarious processes, and symbolic processes (i.e., verbal and written communication), rather than in performance (Bandura 1977). Role models and mentors for the apprenticeship experiences provide the best sources of nonperformance learning through observations of their behavior. Youngsters (and adults to a lesser extent) imitate (i.e., model) the behavior, attitudes, and values of the role models.

Evidence indicates that role modeling may be most effective if the paired master (i.e., role model) and apprentice hunters are of the same sex. Keilert and Berry (1987) reported that gender is an important factor in determining attitudes about animals and hunting in our society. Female role models may be able to provide unique qualities to the experience to help transfer complex values and attitudes to female apprentices whereas male role models may not be as effective. In addition,

providing a role model or mentor of the same sex as the apprentice may reduce the potential for the apprentice to be intimidated (Jackson 1988). Intimidation and a lack of female role models are 2 reasons McCarty (1985) found for female HTC participants having significantly fewer pre hunting experiences than males.

A notable aspect of the development of an individual's interest in hunting through exposure to a role model is that the individual is taken afield, not necessarily that s/he carried a firearm. Placing an individual in a shooting situation before having other nonshooting apprenticeship experiences may be detrimental to the individual's later hunting participation. Some new hunters may be more sensitive to the death of an animal than are other new hunters especially when the animal's death is caused by the new hunter. Decker et al. (1984: 43) suggested that apprenticeship experiences without carrying a firearm ...

... may be necessary to ease the initiation into hunting of a youngster sensitive to the death of an animal... the death of an animal at one's own hands can be a very traumatic experience. By allowing the child to observe the parent [or surrogate] enjoy all the elements of the hunt -- the companionship, the autumn colors, the skill, the chase, the meal (and all the psychological rewards therein) -- and to participate in most, the killing of game does not take place in a vacuum; a role model shows the way. The conflicts which the youngster has concerning hunting are slowly resolved as he/she assimilates the attitudes, beliefs, and values of the hunting guardian without being psychologically burdened with the responsibility of the kill.

This suggests that some initial field experiences where the pilot program participants do not carry firearms afield may be valuable in setting the stage for subsequent field experiences where firearms are carried by all participants.

Building upon an individual's interest in hunting may be enhanced by providing experiences that help attain personal goals or realize satisfactions. Three categories of satisfactions from hunting or motivations to hunt have been identified for hunters in New York: achievement, affiliative, and appreciative (Purdy and Decker 1986).

Achievement-oriented satisfactions are sought by persons who think that hunting

presents a challenge and a test of their hunting knowledge and skills. For these people, satisfying experiences include: getting their bag limit or almost always being successful in bagging game, bagging an animal of large size, making a difficult shot, showing game they bagged to family and friends, being thought of as a good hunter, or having good hunting equipment. Affiliative-oriented satisfactions are sought by people who believe hunting presents an opportunity to enjoy the companionship of family or friends by sharing an outdoor activity. Satisfying experiences for affiliative-oriented hunters include sharing stories of hunting activities with companions, maintaining traditions of hunting with others, and simply being afield with other people they like. Appreciative-oriented satisfactions are sought by people who believe hunting represents an opportunity to be afield and appreciate nature. Satisfying experiences for these hunters include simply getting away from everyday problems, experiencing the solitude, smells, and sounds of the outdoors, and observing all types of wildlife. A hunter seeks 1 or a combination of these satisfactions at any 1 time and the satisfactions sought may change from 1 situation to another.

Purdy and Decker (1986) reported that more younger than older "new" hunters and more male than female "new" hunters sought achievement-oriented satisfactions. It should be recognized, however, that although 1 type of satisfaction may be most important for an individual at any one time, other satisfactions are also sought.

Decker et al. (1984) suggested that individuals who seek multiple satisfactions or have multiple motivations for hunting are more likely to continue hunting. As a way of developing multiple satisfactions in "new" hunters, those responsible for program development may want to consider developing a series of apprenticeship experiences that emphasize each type of satisfaction. For example, a waterfowl hunt from a blind with 3 or 4 friends may be planned to provide affiliative satisfactions; a grouse hunt with only 2 or 3 individuals may be planned to coincide with the peak of the fall

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in the
program

colors or on which nuts and fruits are identified may provide some appreciative satisfactions; a hunt for stocked pheasants may provide some achievement satisfactions.

The relationship of an apprenticeship experience to level of hunting adoption was demonstrated by Purdy's and Decker's (1986) study of 1983 HTC graduates. The majority of those HTC graduates who did not have an apprenticeship experience were in the interest stage of hunting adoption. The majority of those who did have an apprenticeship experience were in the continuation stage of hunting. Of particular note is the fact that 10% of those without such an experience ceased hunting compared to only 2% of those with the experience.

importance of experience

There is evidence that the apprenticeship experience has a greater influence on younger hunters than older ones. Of those with an apprenticeship experience, 63% of HTC graduates in 1983 who were age 19 and younger were in the continuation stage of hunting adoption compared to 49% of those who were ≥ 20 years of age. The apprenticeship experience is still important for hunters >20 years of age. It is more valuable, however, in getting these older individuals to try the activity than in influencing their continuation with the sport.

The information cited above provides support for the first 2 hypotheses. People who have the socialization opportunities afforded by apprenticeship experiences are more likely to continue participation in hunting and the impact of the experiences is greater on younger hunters than older ones.

Apprenticeship experiences should not be limited to the time spent hunting in the field. Recreational behavior theory suggests that any activity, including hunting (e.g., Langenau and Peyton 1982), has 3 general stages as shown in Table 1. The stages are (1) planning and preparation, (2) field experience, and (3) recollection. During the planning and preparation stage, an individual performs activities which help

Table 1. Three stages of recreation behavior and examples of each stage for small game hunting.

<u>Stages of Recreation Behavior</u>		
<u>Planning and Preparation</u>	<u>Field Experience</u>	<u>Recollection</u>
Reading magazines about hunting	Traveling to hunting location	Telling hunting stories
Learning shooting skills	Searching for game sign	Looking at photographs
Hearing hunting stories	Examining wildlife food sources	Cooking game
Obtaining hunting clothes and equipment	Watching dogs hunt	Eating game
Cleaning firearms	Using orienteering skills	Having trophy mounted (including collecting squirrel tails, grouse tails, etc.)
Re-loading shotshells	Encountering game	Cleaning firearms
Learning habitat/wildlife relationships	Shooting at game	Updating a hunting journal
Finding hunting location on map	Traveling home from hunting location	
Preseason scouting		
Training dog		

Adopted from Langenau and Peyton (1982).

prepare him/her for the hunt afield. Because hunters often spend more time preparing for the hunt than they spend in the field (More 1979), the planning and preparation stage is very important to the total hunting experience. The field experience stage comprises the hunt itself. Finally, the recollection stage includes reminiscing and sharing stories about the hunt, cleaning firearms and game, and eating the game. This last stage reinforces and adds to the satisfactions gained through the other stages. Encouraging an individual's participation in the total hunting experience from planning through recollection likely will enhance the socialization process and the development of hunting values, and will increase the individual's hunting knowledge and skills.

Social Support

One aspect of program-sponsored social support is to create surrogate support of an individual's interest in hunting. The surrogate social support may take many forms including encouragement of an individual's interest in hunting through reassurance, companionship in the planning for the hunt, providing transportation to and from the hunting area, etc. Thus, the influence of the providers of apprenticeship experiences is integral to the social support system. Comparison of people who were influential in the formation of hunting opinions among 1983 HTC graduates with graduates' stage in the hunting-adoption process reveals the following findings:

- (1) A greater proportion of those who had some positive support for their hunting opinions were in the continuation stage of hunting adoption compared to those with neutral or negative influences.
- (2) A combination of positive family and positive nonfamily influences resulted in the greatest proportion of people in the continuation stage.
- (3) Almost as many were in the continuation stage who had a positive family influence but did not have a positive nonfamily influence.
- (4) Of those with positive nonfamily influences, a greater proportion were in the trial stage, but about an equal proportion of those with positive

nonfamily influences and those with neutral or negative influences were in the continuation stage.

A comparison of the influence of family and nonfamily across different age groups shows that:

- 1) A greater proportion of those age 15 and younger with positive family influences versus positive nonfamily influences were in the continuation stage;
- 2) For HTC graduates between 16 and 19 years of age, about an equal proportion of those with positive family or positive nonfamily influences were in the continuation stage (a slightly greater proportion of 17-19 year olds with positive nonfamily than with positive family influence were in the continuation stage);
- 3) A greater proportion of those ≥ 20 years of age with a positive family influence were in the continuation stage than those with a positive nonfamily influence. A higher percentage of those with a positive nonfamily influence than with a positive family influence were in the trial stage.

People who influence a person's hunting opinions provide the social environment that either encourages or discourages an individual to initiate hunting. The opinions of family and friends are one important type of social support; however, another is the person or people who initiate a new hunter into hunting and accompany them afield.

HTC graduates 16 years old and younger hunted primarily with family members. At 17-19 years of age there was a more even split between those who hunted most frequently with family versus nonfamily companions. Over 80% of HTC graduates 20 years old and older hunted most frequently with nonfamily companions.

Examination of the relationship of hunting companions and stage of hunting adoption shows similar proportions of people in the trial, continuation, and cessation-desertion stages, regardless of whom they hunted with most frequently. There are distinct differences, however, in the influence different hunting companions seem to have on new hunters of different ages. HTC graduates 19 years old and younger who hunted most frequently with nonfamily companions were even more likely than those

fixed to moral dev

who hunted most frequently with family members to be in the continuation stage.

This distinction did not exist for those 20 and older.

H4
The findings that nonfamily companions have a greater influence than family members during adolescence is what one would predict based on moral development theory. These relationships, as well as those between family and nonfamily influences and stage of hunting adoption, lend support to hypotheses 3 and 4. The influence of nonfamily companions predominates between 16 and 19 years of age. Nonfamily influence on hunters' continued participation is less after age 20, but seems to be an important factor influencing people's advancement to the trial stage of hunting adoption during this period of life.

As indicated above, companionship is an important aspect of social support. A number of studies have indicated that approximately 90% of hunters hunt with companions (Lowe 1978, Purdy and Decker 1986). A survey of first-time deer hunters in New Jersey (Applegate and Otto 1982) found that 4 of 5 new hunters hunted with at least 1 companion during every hunt of their initial season.

Not only is companionship a strong motivator for participation in hunting, but lack of companions may also be responsible for decreased involvement in the activity (Purdy and Decker 1986). In a resurvey of 1978 HTC participants, Purdy et al. (1985) found that nearly half of those who ceased hunting said that it was important for them to be in the company of family and friends when hunting. Lack of hunting companions was the reason cited most frequently by potential hunters in New York for not hunting (Decker and Brown 1982). Because potential hunters age 14-15 in New York must be accompanied by an adult 18 years or older, lack of hunting companions may be a special concern for the youngest group of hunters.

Just as apprenticeship experiences should not be limited to the time spent hunting in the field, social support should not be limited. Encouragement and

logistical support (i.e., assistance) in planning and preparing for the hunt and after the hunt may be very important aspects of the total hunting experience. Support before and after the hunt is especially important for individuals targeted by the pilot program since they lack much of the knowledge and skill required to have a "successful" hunt.

The data from the study of HTC graduates by Purdy and Decker (1986) support the ideas that both an apprenticeship experience and a social support system encourage progression in the hunting-adoption process. The question that remains to be answered is whether the apprenticeship experience alone is sufficient to get people to the continuation stage, or if a social support system is a vital ingredient necessary for continued participation in hunting.

A logistic regression analysis was performed by Pomerantz and Decker (1986) to determine the relative effect of an apprenticeship experience, type of social support (i.e., family, nonfamily), and age of an individual on stage of hunting adoption. Other variables believed relevant to one's stage in the hunting-adoption process were analyzed in the regression model also. These included a measurement of social influences regarding hunting, an individual's overall attitude toward hunting, the importance of successfully harvesting game, and types of satisfactions one can derive from hunting (i.e., achievement, affiliative, and appreciative).

The five variables that were statistically significant in explaining the variation in stage of hunting adoption (listed in order of decreasing importance) were apprenticeship, harvest success, social norms (i.e., attitudes and expectations of others), achievement satisfaction, and positive family influence.

Although this model does not enable us to explain all the factors that contribute to an individual's progression through the hunting-adoption process, it does permit us to see the relative effects of age, apprenticeship, and family influence. The fact that

Not just
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activity
for first time

urban base, it was believed that the area may have a high proportion of individuals who are interested in hunting but do not have apprenticeship opportunities or social support for hunting. In addition, Region 3 has numerous active sportsmen's organizations and 4-H shooting sports programs that may be able to provide assistance with program implementation.

Status of Program Development

The Task Force has met twice to discuss development of the pilot program. At the first meeting, the Task Force was presented with the charge of developing a pilot program based on the elements of apprenticeship and social support that addresses the decrease in hunting participation. Much of the first meeting involved a discussion of a 1-day field experience for new hunters conducted in Oswego County. A summary of that field experience and the implications of its accomplishments from the context of the pilot program are discussed in Appendix A of this report.

Further discussion about the development of the pilot program was continued at the second Task Force meeting. At the meeting, numerous topics were discussed including: (1) whether to proceed with development of the pilot program, (2) who should conduct the pilot program, (3) who would be enrolled, (4) operationalization of apprenticeship and social support, (5) administrative sequence of events, (6) what costs and liabilities exist and what support is needed, and (7) alternatives or additional actions recommended to accomplish the goal. A summary of the meeting is presented in Appendix B and provides documentation of pilot program development to date.

Identification of Program Needs

Several needs have been identified regarding development of the pilot program. By addressing the needs adequately and in a timely manner, program development can proceed smoothly and the desired focus for the pilot program will be maintained. Without addressing these needs, it is likely that the full potential of the pilot program will not be achieved, and that program impacts will be less than desired.

The needs are:

- (1) Identifying and clarifying the respective roles and responsibilities of the Task Force and HDRU.
- (2) Reconsideration of Task Force membership.
- (3) Establishing specific program objectives.
- (4) Identifying potential participants to be included in the pilot program.
- (5) Defining the time frame for the pilot program.

Identifying the roles and responsibilities of the Task Force and HDRU

DEC has expressed the desire to approach the operationalization of the pilot program as a research project to document fully the methods and effort employed and the impacts achieved. Different individuals and groups have been asked to contribute their unique abilities to the successful completion of the project. Close cooperation and coordination will be required to accomplish this. However, to ensure an efficient and effective operation, the respective roles of 2 major contributors, the Task Force and HDRU, are outlined in Table 4 and are discussed below.

The role of the Task Force members, as charged at the first Task Force meeting, is to develop a pilot program to address the problem of decreasing participation in hunting. The Task Force has been asked to design the program activities that operationalize the experimental design (i.e., operationalize definitions of apprenticeship and social support). The implementation strategy and schedule are to

age does not enter the model indicates that age alone does not account for an individual's stage in the hunting-adoption process. The variable that explains the greatest amount of variation is apprenticeship.

45 The ability to test hypothesis 5 is somewhat limited. Although the data lend support to the hypothesis that an apprenticeship experience with a social support element is more effective in influencing greater hunting involvement than the experience without such support, the trends are weak. What must be recognized is that the study of HTC graduates by Purdy and Decker (1986) was not designed to test these specific hypotheses. The variables measured by that study approximate the concepts of social support, but do not represent them comprehensively. They do not measure, for instance, logistical concerns such as transportation needs or the availability of hunting companions. These types of concerns may require further consideration by those who develop the pilot program.

This discussion of the theoretical foundation of the pilot program has been provided to enhance understanding of apprenticeship and social support in the context of the pilot program. By providing this discussion, those who develop the program will have a better opportunity to develop a program that has a strong theoretical base and for which empirical evidence indicates a relationship between the program elements and continued participation in hunting.

PROGRAM DEVELOPMENT: STATUS AND NEEDS

Evolution of the Pilot Program Concept

The concept for a program to address the problem of decreasing participation in hunting has evolved through 3 major stages (Table 2). The 3 stages are discussed below for 2 reasons. First, because the program focus shifted twice, the discussion will provide insight into how and why the focus shifted. Second, such a discussion

Table 2. Evolutionary stages for a program to address the decrease in participation in hunting showing the problem, recognized cause, and program focus for each stage.

<u>Stage</u>	<u>Problem</u>	<u>Suspected Cause</u>	<u>Program Focus</u>
Stage I	Decreasing participation in hunting	Hunter training courses not meeting many individuals' informational, motivational, and logistical needs	Modify HTC format
Stage II	Same	HTC limitations are only 1 of many causes including lack of apprenticeship and social support, posting, game abundance, complexity of regulations, etc.	Involve numerous DEC program areas in a comprehensive approach
Stage III	Same	Same as in Stage 2, but with recognition that 1 program could not address all of the factors affecting an individual's decision to participate in hunting	Develop a pilot program to test only 2 elements that might affect an individual's participation in hunting

will help to explain how the pilot program to be developed, although itself narrow in focus, is only one part of the broad-based approach needed to address effectively the decrease in participation in hunting in New York.

Stage 1

In stage 1 DEC identified an administrative problem: participation in hunting in New York was decreasing. Initially, DEC suspected that limitations in HTCs may have been a leading contribution to the decrease in participation. Hunter education courses generally provide training in firearms safety for prospective hunters and promote responsible hunting behavior. However, Pomerantz and Decker (1986) suggested that

the ultimate purpose of hunter education is to help those people who wish to do so gain maximum benefit from the wildlife resource through safe and enjoyable hunting experiences. Apparently, these benefits are never attained for many HTC participants. Research in New York (Purdy and Decker 1986) found that up to one-quarter of HTC participants do not purchase a hunting license within 2 years after graduation. The high percentage of persons who do not participate in hunting may be symptomatic of limitations in the typical HTC in meeting many participants' particular informational, motivational, and logistic needs. Because of the belief that limitations in HTCs were involved, DEC's initial approach to address the decrease in participation focused only on modifying the format of HTCs.

HDRU was asked to assist in DEC's efforts to address the decrease in hunting participation by identifying research findings on the elements needed in hunter education programs that would encourage people's long-term participation and commitment to hunting. HDRU prepared a report (Pomerantz and Decker 1986) that reviewed research findings about young people's participation in hunting and examined HDRU research findings in the context of theories (i.e., moral and cognitive development) that help to describe the process leading to an individual's decision to participate in hunting. The report concentrated on the implications of theory and research for possible modification of HTCs.

Stage 2

Review of the relevant theory and specific research about participation in hunting indicated that addressing the decrease in participation would involve more than HTCs. It became evident that numerous issues were involved such as those listed in Table 3. Although HTCs provided the legal entry point to hunting, it was recognized that a comprehensive approach was needed to address adequately the

Table 3. Factors that influence an individual's decision to participate in hunting.

Access to land on which to hunt
Anti-hunting sentiment
Family and peer support for hunting
Game abundance
Habitat conditions
Hunting apprenticeship experiences
License costs and types
Complexity of regulations
Cost and availability of equipment

decrease in participation. Thus, the scope of thinking about a program to address the decrease in hunting participation shifted from modifying HTC's to developing a broader, comprehensive approach that would need to involve numerous DEC program areas including HTC's, access, land management, licensing, and others.

Stage 3

DEC and HDRU agreed that a larger, ad hoc group of agency personnel with interest in addressing the decrease in participation in hunting could best develop an approach with the comprehensiveness needed. An ad hoc group was formed and presented with research findings regarding factors that influence an individual's decision to participate in hunting. After discussing the research findings, it became evident that no single program thrust could address adequately the decrease in participation. Thus, the scope of thinking about a program shifted for a second time.

The ad hoc group suggested that DEC appoint representatives to a special Task Force charged with developing a pilot program. As depicted in Figure 2 the focus of the pilot program is narrower than that of the comprehensive approach in that it concentrates only on retaining the existing population of people who express an interest in hunting by attending a HTC. In addition, the pilot program incorporates

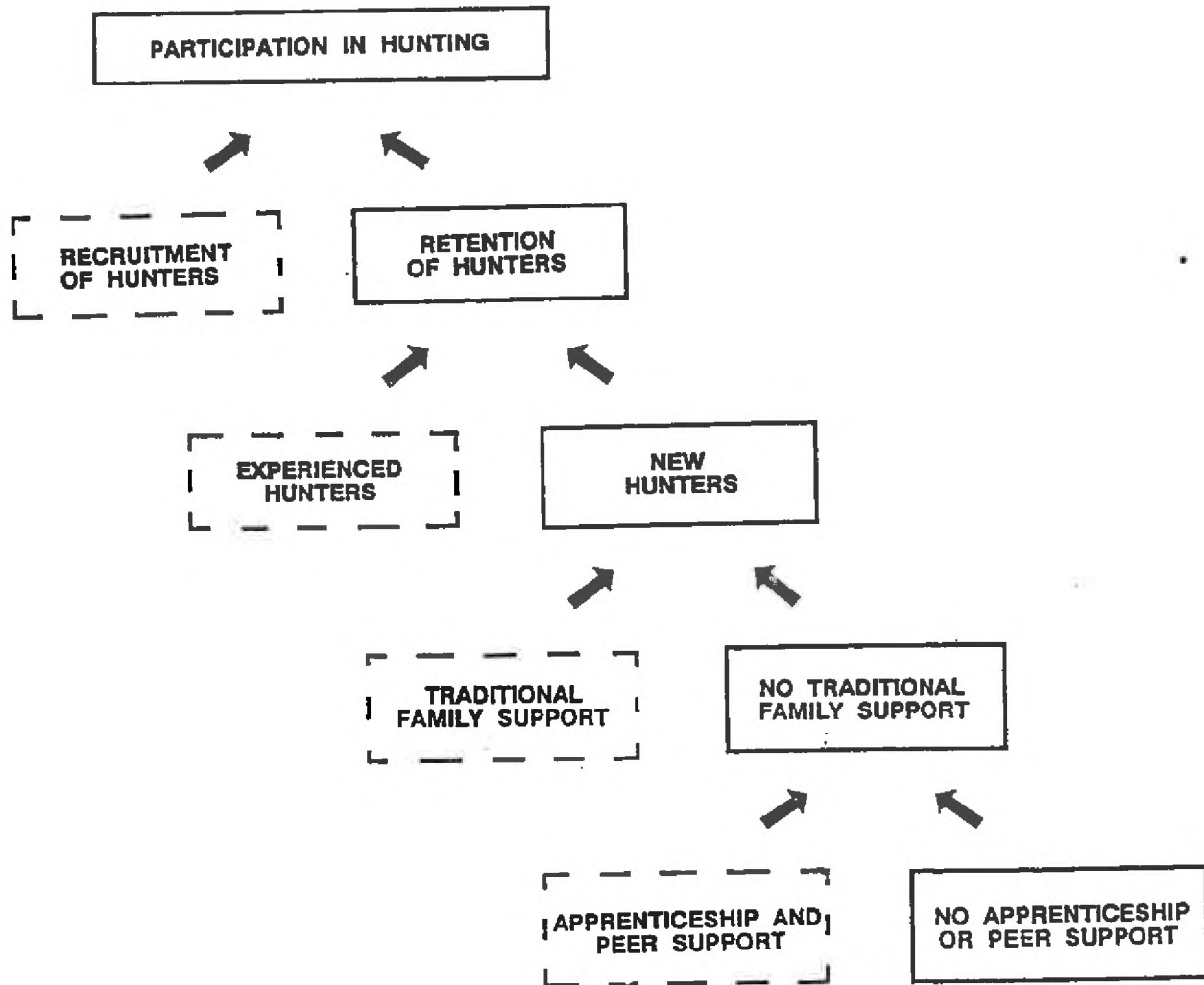


Figure 2. A model of hunting participation highlighting in solid boxes those elements considered in the pilot program to increase the proportion of individuals who continue to participate in hunting.

only 2 of the elements that may influence participation in hunting, but they are among the most important and are susceptible to "testing" in a quasi-experimental evaluation effort. DEC and HDRU agreed that the pilot program would be approached as part of a research and evaluation project that would be conducted in a limited geographic area within the State, its impact evaluated, and its applicability as a statewide program assessed.

Experimental Design of the Pilot Program

The goal of the pilot program is to increase the proportion of HTC graduates who continue to hunt over time (i.e., progress to the continuation stage of hunting adoption). To accomplish this goal, an experimental design for the pilot program was suggested by Pomerantz and Decker (1986). Based on the theoretical support and empirical evidence for those factors that influence an individual's decision to participate in hunting, the experimental design compares the effects of 2 treatments: (1) apprenticeship experiences, and (2) the combination of apprenticeship experiences and social support. A control group should be identified with neither the apprenticeship experiences nor the social support. Depicted in Figure 3 is the model for the pilot program showing the relationship between the experimental treatments and the program goal.

Selection of Task Force Membership

Careful consideration was given to the criteria for selecting membership so that the Task Force would include individuals with expertise in a variety of areas believed to be important for program development. Criteria were developed and agreed to by DEC and HDRU consultants. Task Force membership criteria were:

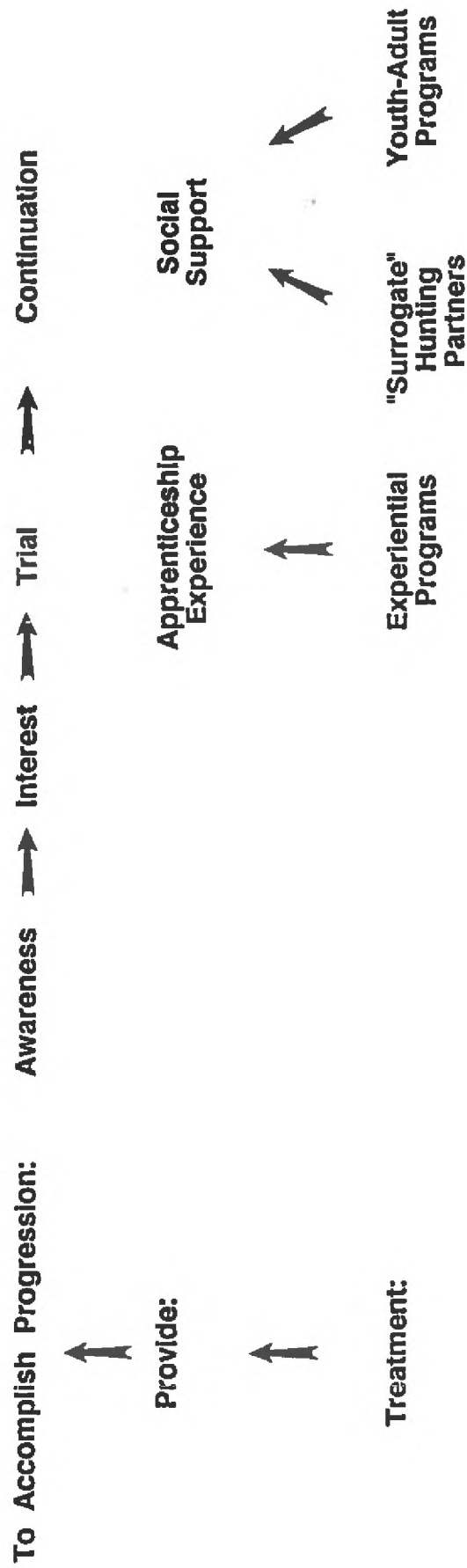


Figure 3. Model for pilot program to address the decrease in hunting participation.
(From Pomerantz and Decker 1986)

- (1) **Ownership of the program -**
The Task Force members should be drawn primarily from people within the Bureau of Wildlife who have a vested interest in the program's outcome and the ability to implement program activities.
- (2) **Ability to make policy-level decisions -**
If it is deemed unrealistic for a policy-level person to be a Task Force member, then someone with that stature should be designated as an official liaison to the Task Force. This individual would be responsible for (a) communicating to the Task Force the scope of the Task Force objectives and activities, (b) tracking the progress of the Task Force's activities and providing appropriate feedback from the central office, and (c) providing the authorizing mechanisms for program implementation.
- (3) **Implementation of the program -**
People responsible for program implementation should be represented on the Task Force.
- (4) **Regional and central office representation -**
There should be a balance of members representing both regional and central office perspectives.
- (5) **Sportsmen Education -**
Representation of regional sportsmen education coordinators is needed.
- (6) **Landowner Assistance Unit -**
Representation from this and any other program area considered critical to the solution of the problem of decreased hunting participation should be included.
- (7) **Expertise in recruitment of volunteers -**
It is anticipated that any pilot effort will require extensive support from volunteer instructors. Someone with knowledge of effective strategies for recruiting and retaining volunteers is considered crucial to the success of this effort.

Members selected for the Task Force (Fall 1987) included: 3 Regional Sportsmen's Education Coordinators, 1 Senior Wildlife Biologist, 1 DEC facilitator, and a HDRU representative as a consultant and evaluator. Actual Task Force membership does not indicate that the criteria were applied. Implications for this are discussed in a later section.

DEC administrative Region 3 was tentatively selected for the focus of the pilot program. Several factors contributed to the selection of this area. This Region has a relatively large number of HTC participants annually. Because Region 3 has a large

Table 4. Roles and responsibilities of HDRU and the Task Force for development of the pilot program.

<u>HDRU Role</u>	<u>Task Force Role</u>
Provide theoretical and statistical consultation to the project and evaluate the pilot program	Develop a pilot program based on current theory to test the model program that addresses the decrease in participation in hunting
<u>HDRU Responsibilities</u>	<u>Task Force Responsibilities</u>
Provide theoretical and empirical evidence for factors promoting hunting participation; describe underlying model.	Develop an understanding of the model.
Define terms in experimental design.	Operationalize experimental design by designing program activities.
Evaluate whether program is based on the model.	Establish program objectives.
Evaluate if implementation is on track.	Establish temporal scope of the pilot program.
Evaluate if short-term objectives are being met.	Fine-tune program design.
Evaluate long-term impacts.	Oversee implementation.
	Design remedial actions if necessary.
	Judge agency satisfaction with the outcome and administration of the program vis-a-vis statewide implementation decision.

be developed by the Task Force. In addition, the Task Force will be asked to develop any remedial actions needed to fine-tune the program during its implementation to ensure the stated objectives will be met.

The role of HDRU will be different, but closely tied to that of the Task Force as shown in Table 4. HDRU has been asked to be theoretical and statistical consultant to the project, and to evaluate the pilot program. As consultants, HDRU has provided theoretical background information and empirical evidence for factors that promote continued participation in hunting and therefore are candidates for attention by the pilot program. Other information related to the number of people needed in the program for evaluative purposes will be provided by HDRU. As evaluators of the pilot program (see the evaluation strategy beginning on page 36), HDRU has been asked to work with the Task Force to ensure that the program design is based on the underlying conceptual model. HDRU will assess whether implementation is following the program design and will also assess whether the program is producing the desired short-term impacts during implementation. If these impacts are not being produced, HDRU will attempt to determine why and will provide information to assist the Task Force in developing remedial actions. Finally, HDRU will evaluate the more long-term impacts of the pilot program.

Effective coordination and cooperation among the various entities involved in the pilot program requires a clear definition of their responsibilities. Providing this brief discussion of the respective roles and responsibilities of 2 of the major entities should facilitate the efficient operationalization of the pilot program as a research and evaluation project.

Reconsideration of Task Force Membership

DEC decided that a Task Force should be appointed and charged with development of the pilot program. As discussed earlier, careful consideration was given to the criteria for selection of membership, and DEC and HDRU consultants agreed to the membership criteria (see page 24). Comparison of actual Task Force membership with the selection criteria indicates that the selection criteria were not applied fully.

Incomplete application of the selection criteria may have increased the potential for a loss of DEC's desired focus for a pilot program. Although the members selected represent expertise in a few key areas, other valuable expertise outlined in the selection criteria is lacking. Adding expertise in DEC program areas not represented may facilitate discussion of how best to utilize the full potential of current DEC programs in development of the pilot program.

Establishing pilot program objectives

Establishment of formal, achievable objectives by the Task Force will also facilitate program development and evaluation. The broad goal of the pilot program is to increase the proportion of HTC graduates who continue to participate in hunting over time. However, it is desirable and probably necessary to establish program objectives to: (1) provide targets at which to aim in the development of the pilot program (i.e., degree of effort, cost, etc.), and (2) provide some standards against which to evaluate program success.

The Task Force may want to establish both short-term and long-term objectives. Possible short-term objectives include development of hunting skills (e.g., shooting, tracking, wildlife identification), changes in an individual's intentions to hunt, and accelerating positive changes in an individual's stage of hunting adoption (see Figure

for actual hunting behavior. Some management decisions may be based on whether these short-term objectives are achieved. Actual hunting and license-buying behavior may be assessed 2 or 3 years after completion of the pilot program, and may be used as feedback to verify the accuracy of the short-term objectives.

Time frame of the pilot program

Closely associated with the establishment of specific program objectives is the establishment of a time frame for the pilot program. Achieving the goal of increasing the proportion of individuals who continue to participate in hunting over time is a long-term process which involves several levels of goals (Figure 4). Achieving each successive level depends on first achieving the preceding level of goals. Immediate goals may be thought of as the direct outcomes from activity elements of a program may include changes in participants' knowledge, skills, and intentions. Achieving these immediate goals is a necessary step in the achievement of the intermediate goals. The intermediate goals involve developmental processes that may require repeated achievement of various immediate goals. Only through achievement of the immediate and intermediate goals can the long-term goal be achieved.

One of the most important aspects of achieving the long-term goal is that multiple hunting experiences over time are required. How many experiences and the length of time needed is not known with certainty and probably varies from one individual to another; however, Purdy et al. (1985) provide some insight into this question. Interviews conducted with a small sample of 1984 HTC graduates indicated that development of positive hunting attitudes and the development of hunting role models or mentors for the "new" hunters was achieved in fewer than 20 outings over several years. Important to note is that the development of attitudes and role models did not occur from only a few experiences. Because personnel and monetary

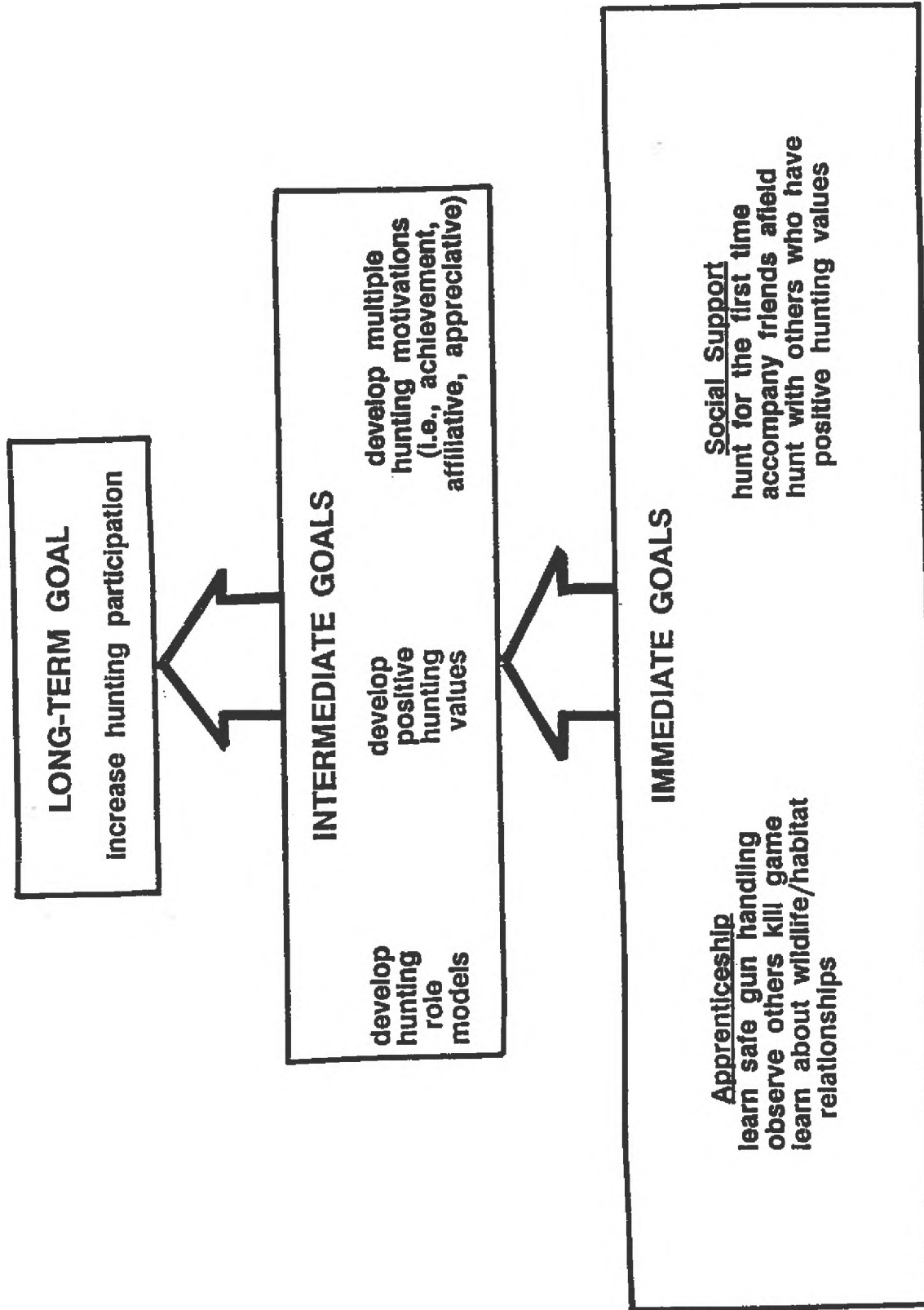


Figure 4. Relationship between the basic immediate goals, the more complex intermediate goals, and the long-term goal of increasing participation in hunting.

considerations may be important for the establishment of the pilot program time frame, both the Task Force and appropriate DEC decisionmakers should be involved.

Selecting participants in the pilot program

DEC has determined that participants in the pilot program should be those persons who are interested in hunting, but who cease to participate for some reason. As discussed in an earlier section of this report, those who cease to participate tend not to have had hunting apprenticeship experiences or the social support necessary to have a "successful" hunting experience. Thus, lack of apprenticeship experiences and social support for hunting are 2 important criteria for selection of participants in the pilot program. Adults as well as youths may meet these criteria.

The thrust of this program thus far has been on youth participation in hunting. However, HDRU research (e.g., Brown et al. 1981, Purdy and Decker 1986) has shown that while the number of HTC participants ≥ 17 years of age increased about 13% from 1978 to 1983, the proportion of HTC participants ≥ 17 years of age has increased 29% over the same time period (Table 7). In 1983 over half of all HTC participants were ≥ 17 years of age. Implications of this trend for the pilot program are discussed below.

Older HTC participants often become interested in hunting through friends or marriage rather than through family members (Purdy and Decker 1986). Because of this, these older individuals are less likely to have had apprenticeship or social support than are the younger HTC participants. For example, 13% of the 1983 HTC graduates ≥ 17 years of age did not have apprenticeship whereas only 4% of those ≤ 16 years of age did not have apprenticeship (Purdy and Decker 1986). Thus, a large percentage of individuals who meet the criteria for inclusion into the pilot program can be expected to be ≥ 17 years of age.

In 1987 approximately 3,230 individuals graduated from HTC's in Region 3. Multiplying by the proportion of HTC participants expected to meet the pilot program criteria (i.e., 10% [Pomerantz and Decker 1986]) gives 323 potential participants in Region 3. However, if implementation during the fall hunting season is desired, potential participants must be screened by 1 October. Only about one-quarter of the HTC's are conducted by 1 October (J. Ford, NYSDEC Region 3 Sportsmen Education Coordinator, pers. comm.). This would reduce the potential pool of participants (i.e., $323 \times .25$) to about 80. Of these 80, more than half would be expected to be ≥ 17 years of age. In addition, these 80 individuals may be distributed throughout the Region which will make logistical planning for the pilot program extremely important.

A discussion of these needs has been provided to assist the Task Force with developing a pilot program with the greatest opportunity to accomplish its goal. To assist the Task Force further, the strategy to be used to evaluate the pilot program is provided in the next section.

Table 7. Comparison of the number and proportion of individuals in 4 age classes of graduates of New York State hunter training courses in 1978 and 1983.

<u>Age</u>	<u>1978 HTC graduates</u>		<u>1983 HTC graduates</u>	
	<u>n</u>	<u>%</u> ¹	<u>n</u>	<u>%</u> ²
≤ 13	2,455	4.6	7,258	15.4
14-15	25,294	47.4	13,244	28.1
16	4,589	8.6	2,734	5.8
≥ 17	<u>21,025</u>	<u>39.4</u>	<u>23,896</u>	<u>50.7</u>
Total	53,363	100.0	47,132	100.0

¹Percentage data for 1978 are from Brown et al. 1981.

²Percentage data for 1983 are from Purdy and Decker 1986.

A COMPREHENSIVE STRATEGY FOR EVALUATING THE PILOT PROGRAM

General description

An evaluation often has been considered to be the final step of any program, typically used to document program impacts. After implementation has been completed, the outcomes have been examined and a determination made of whether the stated objectives have been achieved. However, such a "summative" evaluation strategy (Kraus and Allen 1987) which examines program outcomes does not focus on possible reasons for program failure. In addition, a summative evaluation strategy cannot determine whether the objectives were achieved by following the prescribed plan or whether the objectives were achieved through some other mechanism.

A more complete evaluation strategy is one which examines the program content and implementation approach in addition to the impacts of the program. Such a "formative" evaluation approach (Kraus and Allen 1987) provides a constant review and assessment of program effectiveness and provides feedback that can be used to modify or develop new program strategies or approaches as necessary during program implementation. This kind of evaluation approach is one which helps to make a program successful rather than merely determining success or failure upon completion of the program. Through a comprehensive approach one can make an informed decision about why a program succeeded or failed. For example, Decker (1988) proposed asking the following questions before a decision is made about modification or continuation of a program where the outcomes are less than expected:

- 1. Was the underlying program model faulty?
2. Was the implementation of the program appropriate, carried out as prescribed, etc. or was it incomplete, different from the plan, etc.?
3. Was the evaluation itself adequate in terms of methods, impact indicators examined, scope, detail, etc., to obtain valid, reliable, and programatically meaningful information?

4. Were expectations of outcomes/impacts unrealistic, therefore unattainable?

Without answering these questions the causes of program success or failure can not be determined.

Decker (1988) describes an analysis of program failures and discusses the foundation of a comprehensive strategy for program evaluation. Briefly, the evaluation process should be carried out throughout the program including the early planning and implementation stages, and conclude with an examination of the outcomes. Our evaluation strategy will be of this type. The process will focus on 4 aspects of the pilot program: (1) theory application evaluation, (2) program design evaluation, (3) program implementation evaluation, and (4) program outcome evaluation.

Theory Application Evaluation

Before development of any program can be initiated, the theories upon which it is based should be identified and/or developed into a model for the specific context in which the program is to be conducted. The model should describe sets of assumptions, concepts, and propositions connecting concepts to program elements and outcomes. The strengths of the elemental relationships and the relationships between the model elements and the program objectives determine the strength of the model and thus the theoretical soundness of the program being developed.

A combination of moral and cognitive development theories and empirical findings from several HDRU studies (Brown et al. 1981, Decker et al. 1984, Purdy et al. 1985, Decker and Purdy 1986, McCarty 1985) were used to develop the conceptual model on which the pilot program is to be based. A proposed model (Figure 3 in this report) and its elemental relationships were described in an earlier progress report (Pomerantz and Decker 1986) and have been readdressed in this report to provide clarification.

Evaluation of the theoretical foundation for the pilot program has been initiated. A 3-phase review by persons knowledgeable of both the theories used in the development of the model and the application of those theories is being used. The first 2 phases have been completed. The first phase involved review of the original model elements by HDRU staff and staff from DEC's Sportsmen's Education Program and Bureau of Wildlife. The first review precipitated the need for a synthesis of information about hunting behavior and developmental theory to help identify elements of educational programs and social environments that would encourage an individual's continued participation in hunting.

After the original model was revised, the second review phase was initiated. HDRU staff presented the model and discussed the relationships of its elements with an ad hoc DEC group composed of representatives from the Bureau of Wildlife, Law Enforcement, and Sportsmen's Education who were concerned about the decreasing participation in hunting. These individuals provided expert discussion of how well the model fit the context of what was increasingly recognized as a very complex problem of decreasing hunting participation in New York. The ad hoc group recommended that a Task Force be appointed to develop a pilot program to address the problem.

The Task Force has begun the third phase of model evaluation. This report has been prepared in part to assist the Task Force by providing members detailed discussion of the model elements and their relationship to the decrease in participation in hunting. The discussion is important both from programmatic and evaluation standpoints because the underlying conceptual model must be understood by those charged with developing a pilot program based on that model.

To assist the Task Force further, a preliminary theory application evaluation is provided beginning on page 45.

Program Design Evaluation

The program design evaluation is the process of examining a proposed program design prior to implementation to determine if the design adheres to the conceptual model. During program design evaluation, an assessment will be made of whether all of the significant elements of the model have been addressed and whether they have been addressed adequately. Also examined will be the question of how well the design uses the model elements to meet the program objectives (see page 32). This aspect is extremely important because a sound program model may not result in a satisfactory outcome if the "operationalization" of the model is inadequate or inappropriate (Decker 1988).

Procedural and policy concerns will also be addressed. Can the program be completed in the time frame allowed? Is the amount of effort appropriate to meet the objectives? Is the program logistically feasible? Does the program conform to DEC policy? These questions may appear obvious, but they may be overlooked in the desire to develop a program under tight time constraints.

The program design evaluation will be accomplished through rigorous review of the proposed program by a group of persons selected for their expertise to examine critically the types of questions outlined above with an eye toward the degree to which the conceptual model is operationalized by the proposed program. Membership of this group will be similar to that originally proposed for the Task Force (see page 24). Current Task Force members likely will be included in this review process as will individuals with expertise in additional areas to ensure that any policy-level questions can be answered and to ensure that the pilot program will be complementary to related DEC program areas. Also represented should be those persons responsible for implementation of the various aspects of the pilot program.

Program design evaluation will occur as the plan is developed and will continue after the program has been initiated. The time necessary to complete the program design evaluation will depend on the appropriateness of the pilot program proposed by the Task Force. Several areas of concern will need to be considered for which there is no expertise on the Task Force (e.g., policy-level decisions, complementarity with other DEC program areas, time constraints, etc.). Inclusion on the Task Force of persons with expertise in these areas may facilitate program design evaluation and may shorten the time prior to program implementation. It is imperative that the program design evaluation be completed thoroughly before program implementation occurs. A thorough program design evaluation increases the likelihood that the program will succeed in meeting the objectives and that the success or failure of the program could be evaluated because the theoretical model was used as a foundation for the program.

Program Implementation Evaluation

Program implementation evaluation consists of systematic monitoring of the program as it is being put into effect. This step is used to provide feedback during the course of program implementation that can be used to ensure the program conforms to the design, to modify strategies or reallocate resources if it is determined that the objectives are not being achieved, and to account for time and costs. Constant review and assessment of program effectiveness are essential to achieving program success and for determining causes if the program fails.

To accomplish implementation evaluation, review will be conducted by persons familiar with the program design and its implementation. Persons having expertise in the areas outlined in the section on program design evaluation will be considered for inclusion in this group. Identification of these individuals will be determined prior to

implementation, and membership may change as the plan proceeds and other areas of expertise need to be considered. The group responsible for conducting the implementation evaluation will determine the methods to be followed in a continuously evolving manner.

Variations in the program procedure or time frame will be noted, and the influence of any variations on the overall impact of the program will be discussed and addressed. For example, are the program steps occurring in the correct order and within the proposed time frame? That is, is the program on track? By evaluating the program as it is being implemented, progress can be monitored, problems identified as they develop, and corrective actions taken to prevent deviations from the program plan. In addition, documentation of the variations and their causes will be useful in preventing their occurrence during future program implementations.

Although ensuring conformity to the original plan is an important aspect of implementation evaluation, modifications in the program design may become necessary. The incremental nature of the program will allow an opportunity to evaluate whether the program is achieving some of the desired outcomes. For example, are the immediate and intermediate goals being achieved (see page 32)? Determining the answer to this question may involve a multiple-method approach including personal or telephone interviews with program participants and their parents, interviews with participants and their surrogate role models, and mail questionnaires. Contacts will be made with those implementing the program to discuss the procedure itself, the reactions of the implementers, participants, and their parents or guardians (in the case of youths) whether the implementation procedure is providing the desired impacts, and any other positive impacts or problems which arise. This step will allow any potential problems or concerns to be identified early-on and will allow for remedial action to be taken before implementation proceeds. Similar steps will be

taken at periodic intervals during implementation. These intervals will be chosen after program development has been approved and before program implementation occurs.

During program implementation, a qualitative assessment will be made of the impacts of the pilot program on its participants. An HDRU evaluator may accompany a sample of participants during implementation of some program activities. This will provide an opportunity to observe first-hand the extent to which the program is following specified procedures and is producing the desired immediate results. However, care must be taken to prevent disrupting either the apprentices or the master hunters. The evaluator should be as unobtrusive as possible. This will also provide an opportunity to interview the master hunters about their reactions to the program activities.

Program Outcome Evaluation

The outcome evaluation determines the impacts of a program and the reasons for their achievement. During this phase, an assessment will be made of whether the objectives were met and to what extent they were met. For example, hunting desertion may have been reduced, but was it to the extent desired? Perhaps the percentage of new hunters moving to the continuation stage of hunting adoption from the trial or interest stages was positively affected, but was this at a level lower or higher than established in the objectives? In addition, the program may have achieved the desired results because the implementation deviated from the plan. Subsequent implementation of the same unmodified plan may result in unsatisfactory outcomes if the deviations are not included. By having conducted the 3 preceding phases of evaluation, the program outcome evaluation can be used effectively to determine reasons for levels of program achievement.

It is important to note that the groundwork for outcome evaluation actually is laid prior to program implementation and continues after its completion. Although the final analysis of the outcome evaluation may not be completed until the participants' actual hunting behavior is monitored for several years, the groundwork for outcome evaluation will be initiated concurrent with the implementation evaluation. A diagnostic instrument will be used to screen potential participants (e.g., those who enroll in HTC's) and to obtain baseline information against which to evaluate program impacts. Baseline information will include: hunting values, stage of hunting adoption, hunting intentions, and extent of participants' social support system and apprenticeship activities. Following program implementation, the participants will be asked to provide similar information to assess whether the program treatments effected changes.

Success or failure of the pilot program may be assessed with the information gathered in the preprogram and postprogram instruments and from the qualitative assessments during program implementation. However, more definitive information may be gathered by recording the participants' actual hunting behavior over time. Hunting intentions are only a moderately strong indicator of actual hunting behavior (Purdy and Decker 1986). In addition, the pilot program may stimulate the development of social-support systems external to those provided in the program, and the program may encourage participation in activities similar to apprenticeship after it is concluded. Catalyzing such factors may be more important to the long-term participation of an individual in hunting than the activities provided in the pilot program itself. Only through long-term monitoring of the pilot program participants' actual hunting behavior can all program impacts be identified and the ultimate success or failure of the pilot program be determined with certainty.

A combination of the short-term and long-term approaches to outcome evaluation will provide the most beneficial information. For example, changes in hunting intentions and stage of hunting adoption may be assessed soon after completion of the pilot program. Thus, the degree of success in meeting short-term objectives may be assessed. However, to evaluate whether the objectives related to continued hunting involvement have been satisfied will require a more long-term follow-up.

To measure actual hunting behavior and to assess postprogram effects of the pilot program, participants should be surveyed 2 years after the conclusion of the pilot program. A questionnaire sent to participants 2 years after completion of the pilot program will measure hunting behavior and commitment, and will be used to relate changes in hunting-adoption stage to changes in hunting values. The additional information gained through such an investigation will provide valuable data for use in DEC's decision about implementing a statewide program.

This evaluation strategy has been provided to delineate the steps HDRU evaluators will take to ensure that the pilot program is based on sound theory, that the design is followed consistently throughout implementation, and that the program impacts can be evaluated in a manner that is most useful to DEC decisionmakers. By following this strategy, the fullest potential of the pilot program can be achieved. In the next section a preliminary theoretical content evaluation is provided. The topics discussed are intended to enhance the ability of the Task Force to develop a sound pilot program.

THEORY APPLICATION: PREPARING FOR PRELIMINARY EVALUATION

DEC desires development of a pilot program that has the greatest opportunity to achieve the goal of increasing the proportion of individuals completing a HTC who continue to participate in hunting. The likelihood that this goal can be accomplished will be greatest if it is ensured that the pilot program is based adequately on the theoretical concepts and empirical evidence for those factors that affect hunting participation (i.e., apprenticeship and social support). The important characteristics of these factors were described in detail in an earlier section of this report (see pages 5 and 6).

As evaluator, it is HDRU's responsibility to determine whether the theoretical concepts are being applied adequately. To assist in this task, the operational definitions of apprenticeship and social support tentatively proposed by the Task Force (see Appendix B) have been compared with the important characteristics of apprenticeship (Table 8) and social support (Table 9) drawn from the theoretical and empirical evidence.

Examination of these tables shows that some limitations exist in the operational definitions of apprenticeship and social support. Careful consideration of the limitations and taking corrective action at this time will reduce the potential that program development will deviate from that desired by DEC. Such action also will facilitate development of a program that has the greatest opportunity for success. Recommendations are provided below as a guide.

Table 8. Important characteristics of apprenticeship suggested by theoretical and empirical evidence compared with the operationalization of apprenticeship tentatively proposed for the pilot program. *See Appendix B*

Characteristics of Apprenticeship Suggested by Theoretical and Empirical Evidence	Proposed Operationalization of of Apprenticeship
1. multiple hunting experiences	1. 1-time experience
2. may or may not include handling of firearms	2. includes handling of firearms
3. small maximum group size	3. maximum group size not defined
4. involves total hunting experience from planning to time spent afield to reminiscing and other posthunt activities	4. involves time spent afield
5. development of mentoring relationship a. pair master hunters and apprentices of same sex b. develop trusting relationships c. assimilation of ethical behavior d. assimilation of hunting knowledge and skills e. identification of amicable "end" to relationship	5. not addressed under operation- ization of apprenticeship <i>one-day field event is not conducive to the development of mentors</i>
6. development of multiple hunting satisfactions (i.e., achievement, affiliative, appreciative)	6. encourages development of 1 type of hunting satisfaction <i>only</i> (achievement)

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Table 9. Important characteristics of social support suggested by theoretical and empirical evidence compared with the operationalization of social support tentatively proposed for the pilot program. *See Appendix B*

Characteristics of Social Support Suggested by Theoretical and Empirical Evidence	Proposed Operationalization of Social Support
<ol style="list-style-type: none"> 1. involves total hunting experience from planning to time spent afield to reminiscing and other posthunt activities 2. includes established or specially developed support (friends) 3. capture family interest throughout implementation (i.e., including planning and reminiscing) even if family members do not participate directly in the time spent afield 	<ol style="list-style-type: none"> 1. involves time spent afield 2. includes established peer support 3. provides for parental/guardian participation during time spent afield

Recommendations

Through this preliminary theory application evaluation, we have identified that the development of the pilot program has strayed from the concept of a pilot program desired by DEC. The following recommendations are provided to ensure that DEC's desired focus for the pilot program is maintained and to facilitate development of a sound pilot program. The recommendations are listed in the order in which we believe they should be considered to facilitate their presentation and to underscore their importance:

1. Reconsideration of the Task Force membership to include areas of expertise not represented currently may facilitate development of the pilot program.
2. This progress report should be provided to the Task Force prior to the next meeting so it can be read thoroughly by Task Force members.

3. At the next meeting, a discussion should be held of DEC's concept for a pilot program and the theoretical foundation for such a program.
4. The operationalization and differentiation of apprenticeship and social support should be discussed relative to the context of the underlying theory and empirical evidence for factors that influence participation in hunting. Corrective action should be taken to ensure that the operational definitions of apprenticeship and social support encompass all of the important characteristics outlined herein.
5. Specific program objectives should be discussed and established.
6. The time frame for the implementation of the pilot program should be established.
7. Criteria for the selection of program participants should be finalized.

We hope that this report has provided information useful for the development of a sound pilot program to address the decrease in hunting participation. The intention of this report has been to outline progress in program development thus far and to provoke thoughtful consideration and discussion of the most appropriate ways to ensure development proceeds toward the type of program desired by DEC. This process should encourage development of a pilot program that has the greatest opportunity for success.

APPENDIX A:
LEATHERSTOCKING SPORTSMEN'S CLUB PHEASANT HUNT

Initiation

In August 1987 the Leatherstocking Sportsmen's Club initiated plans for a one-day pheasant hunt for new hunters in Oswego County. Club members apparently contacted Capt. Alex Zukofsky, DEC Division of Law Enforcement, about providing this experience as a "public service" event for youths graduating from HTC's conducted in Oswego County during the early autumn of 1987. This hunt was not part of the pilot program to address the decline in hunting participation that was being discussed by DEC at that time. Rather, the hunt was conceived independently by Leatherstocking Club members who contacted Capt. Zukofsky for assistance. HDRU agreed to evaluate the pheasant hunt because of its potential to provide insights for the hunting retention pilot program to be developed by the Task Force.

A permission form and diagnostic instrument designed to identify youths without apprenticeship experiences or social support was developed by HDRU. Capt. Zukofsky distributed the forms at 4 HTC's during September and early October 1987 with the expectation of selecting 10 pairs of youths (20 individuals) to participate in the pheasant hunt. Only 7 individuals met the criteria. These 7 along with 15 others were selected to participate in the one-day experience bringing the total number of participating youths to 22.

Personal interviews were conducted with the 7 young hunters meeting the criteria prior to their participation in the pheasant hunt. At least 1 parent of each youth was also interviewed. Open-ended questions were asked about the youth's previous hunting experiences afield with or without a gun (e.g., some of the youths had gone afield with a gun between completion of the HTC and the interview), their expectations and concerns about the hunt, and their general attitudes about hunting.

The information from the interviews and the diagnostic instrument provided a baseline for evaluating the effect of the field experience on the young hunters' attitudes about hunting and their hunting intentions.

Implementation of the pheasant hunt

The Pheasant Hunt was conducted at the Leatherstocking Sportsmen's Club in Oswego County on 25 October 1985. Although the 11 pairs of young hunters and 1 parental supervisor for each pair were to arrive at staggered times throughout the morning, most groups arrived by mid-morning. Upon arrival, the groups were taken to shoot skeet to gain experience in shooting a firearm at a moving target and to reinforce safe gun-handling techniques. After shooting skeet, the groups returned to the club house where hunting videos were available for viewing. Hunting groups (i.e., each pair of young hunters and their parental supervisor) were transported to 1 of 2 hunting fields. In the field, hunting and safety instructions were reiterated by 2 club volunteers. The hunters assisted the club volunteers with releasing a pheasant prior to each hunter's turn to shoot. A Brittany spaniel handled by a trainer was used by each group to assist in locating released pheasants. All young hunters had at least 1 opportunity to shoot at a pheasant. After the field experience, hunting groups returned to the club house.

Two HDRU staff members and 2 Task Force members observed the pheasant hunt. Young hunters and their parents were interviewed in the field to obtain qualitative information about their reactions to this one-time experience. Leatherstocking Club volunteers were also interviewed to obtain their assessment of the hunt.

Post-hunt interviews and pheasant hunt accomplishments

The 7 young hunters identified as not having apprenticeship experiences or social support, and their parents, were interviewed by telephone within 1 month following the pheasant hunt. Young hunters were asked to describe the hunt and their feelings about it. Parents were asked about their own perceptions of their youngster's enjoyment and to describe any concerns regarding the experience. These interviews provided insight into how the pheasant hunt may have influenced their future hunting participation.

All the young hunters interviewed indicated that they eagerly anticipated their turn to shoot at a pheasant. None believed they were nervous or anxious about shooting in front of a group of people. Indeed, all 7 shot a pheasant. For 5 of the 7 young hunters, the pheasant hunt was the first time they killed a game animal. None of the youngsters expressed any feelings of remorse, and 5 hunters expressed excitement and pride that they had been successful. However, 1 youth expressed concern that the artificiality of the experience made shooting the pheasant "too easy," and several hunters said that the poor quality of the pheasants detracted from the experience.

When asked about the most enjoyable part of the hunt, various responses were given. Several youngsters indicated that the most enjoyable part was shooting the bird. Whereas others said they enjoyed the more realistic experience of trying to locate previously missed birds in the old fields and woods. "Taking the bird home" was the most enjoyable part to 1 young hunter whereas another indicated it was going hunting for the first time. Overall, the young hunters said they enjoyed the field experience.

Although 5 of these youngsters had not hunted previously, they recognized that this experience was not realistic. They said that hunting wild pheasants or other

small game would be more difficult because they would not know where an animal was, or when it would flush. Differences in habitat types were also recognized to increase difficulty in shooting under more realistic conditions. The young hunters also believed that a realistic hunt would be more aesthetically pleasing. Perhaps because the youngsters were paired with the friend, and in some cases a family member, they suggested that the companionship aspect of the pheasant hunt was similar to that of a more realistic hunting experience although they had few or no experiences on which to base this comparison.

Many of the parents' perceptions of the hunt reflected their youngsters' perceptions. Most of the parents perceived that the young hunters were proud of their success in bagging a pheasant. Other activities perceived to be enjoyable for the young hunters included skeet shooting, hunting with dogs, and retrieving the pheasant.

The hunters interviewed indicated that they participated in some activities that were not provided directly by the hunt. All 7 of the young hunters participated in cleaning the pheasant they shot, and for 6 of the 7, it was the first time they helped with this activity. Two pairs of young hunters cleaned their birds together. Each of their families shared the pheasant dinner, and all the young hunters related their hunting stories to family and friends. It was unknown whether any of the other 15 hunters not interviewed participated in these activities although it was unlikely that those unsuccessful in shooting a pheasant did participate.

The pheasant hunt may have provided some unexpected benefits, but benefits whose potential was not fully realized. Although the hunt was conducted as an experience for young hunters, the hunters' parents apparently derived motivation from it as well. The parents who acted as supervisors for the pairs of young hunters agreed that sharing in the hunt increased their desire to go hunting with their

youngsters. One parent not in attendance at the hunt was inspired to resume hunting after having ceased for several years.

When asked whether the pheasant hunt contributed to the young hunters' hunting involvement, the parents and youngsters indicated mixed reactions. All 7 parents believed that the hunt was a "good experience" for their child. Four of the 7 parents interviewed indicated that the experience contributed to an increase in their child's hunting involvement. These parents believed that their youngster had gained an overall appreciation of hunting, that their child was more interested in hunting, and that they had a more positive attitude about cleaning and eating game. Three parents believed that their child was already "involved" before the pheasant hunt. However, fewer of the young hunters believed that the hunt contributed to an increased involvement in hunting-related activities. Only 2 of the 7 young hunters indicated that the pheasant hunt had motivated them to hunt more often. It was not known whether these hunters were previously motivated or whether the pheasant hunt did not produce the desired result.

Evaluation of the Pheasant Hunt

It is recognized that the pheasant hunt experience was not developed within the same conceptual framework in which the pilot program is to be developed. However, an evaluation of this experience from the context of the pilot program may provide the most useful discussion. Table A-1 compares the pheasant hunt experience with the important characteristics of hunting apprenticeship as suggested by theory and empirical evidence. The pheasant hunt is compared with the important characteristics of social support in Table A-2.

The comparisons in Tables A-1 and A-2 indicate that the pheasant hunt was an example of a "unique" experience for the participants, but it was not an example of

Table A-1. Comparison of important characteristics of apprenticeship suggested by theoretical and empirical evidence with the pheasant hunt experience for new hunters in Oswego County.

Characteristics of Apprenticeship Suggested by Theoretical and Empirical Evidence	Characteristics of the Pheasant Hunt Experience
1. multiple hunting experiences	1. 1-time experience
2. may or may not include handling of firearms	2. participants handled firearms
3. small maximum group size	3. participants were paired but up to 10 other people were present during the shooting segment
4. involves total hunting experience from planning to time spent afield to reminiscing and other posthunt activities	4. involved time spent afield with limited program-sponsored prehunt and posthunt activities
5. development of mentoring relationship a. pair master hunters and apprentices of same sex b. develop trusting relationships c. assimilation of ethical behavior d. assimilation of hunting knowledge and skills e. identification of "amicable" end to relationship	5. not possible in 1-time experience a. all apprentices and "master" hunters were male b. not possible c. not possible in artificial hunting situation d. not possible in artificial hunting situation e. mentoring relationship was not initiated
6. development of multiple hunting satisfactions (e.g., achievement, affiliative, appreciative)	6. achievement satisfactions only were promoted

Table A-2. Comparison of important characteristics of social support suggested by empirical and theoretical evidence with the pheasant hunt experience for new hunters in Oswego County.

Characteristics of Social Support Suggested by Theoretical and Empirical Evidence	Characteristics of the Pheasant Hunt Experience
1. involves total hunting experience from planning to time spent afield to reminiscing and other posthunt activities	1. involved time spent afield with limited program-sponsored prehunt and posthunt activities
2. includes established peer support (friends)	2. paired friends together but limited their interaction
3. captures family interest throughout implementation (i.e., including planning and reminiscing) even if family members do not participate directly in the time spent afield	3. required parental/guardian presence to meet legal requirements. Some were permitted to hunt, but family members were not involved in other ways

an apprenticeship experience or of significant, lasting social support. Briefly, the purpose of apprenticeship is to encourage development of positive hunting values and hunting role models for new hunters. This development occurs over time and requires a series of experiences. Through these apprenticeship experiences, an individual who is interested in hunting is exposed to hunting-related activities by a mentor (i.e., role model) and begins to assimilate the mentor's values, beliefs, and attitudes about hunting.

The Leatherstocking Sportsmen's Club pheasant hunt did not provide the types of activities nor the time frame necessary to develop positive hunting values or role models. Although a parent accompanied some of the young hunters on the pheasant hunt, the parents were not in a position to express their hunting values; they could only follow instructions provided by the volunteer sportsmen who were strangers. The

hunters were exposed to these volunteers for less than 1 hour. Such a short exposure was not long enough to develop a sense of rapport and had limited potential for building upon the youngsters' interest in hunting.

The implementation of the pheasant hunt limited the opportunity for the development of multiple hunting satisfactions. Providing multiple satisfactions in any 1 field experience may be difficult, but the limitations of providing only 1 type of satisfaction in the apprenticeship experiences should be recognized. The pheasant hunt was organized to maximize the hunters' chances of bagging a pheasant, and as such was oriented toward achievement satisfactions. Decker et al. (1984) suggested that achievement satisfactions should be emphasized for new hunters as a way of maintaining their interest in the new activity. However, they also suspected that multiple experiences were necessary to reinforce the achievement satisfactions. Some affiliative aspects of the hunt were recognized by the young hunters because they were purposefully paired with a friend. However, no appreciative aspects were planned for the hunt, and none of the young hunters interviewed recognized any appreciative-oriented satisfactions. These are important considerations in light of the suggestion by Decker et al. (1984) that individuals who seek multiple satisfactions or have multiple motivations for hunting are more likely to continue hunting.

Besides not being an example of an apprenticeship experience or social support, the "artificial" hunting situation created for the pheasant hunt may have had some negative implications that need to be considered when developing the pilot program. In the context of the pilot program, any field experience provided for new hunters should be conducted in a manner where positive rather than negative values are reinforced. Although this seems obvious, negative experiences may inadvertently be created through the development of unrealistic expectations. Decker et al. (1984)

suggested that experiences in 1 situation may determine expectations in a later, though not necessarily identical, situation. By encouraging an individual's participation in what they recognize as an "artificial" situation created to facilitate their shooting a pheasant, the individuals may perceive that great expectations have been placed on them. Our data indicated that 1 of the most important motivations for the young hunters at the pheasant hunt was their anticipation of getting a shot at a pheasant. Although all the young hunters we interviewed were successful, we do not know whether lack of success may have adversely affected their future participation in hunting. Those young hunters not interviewed who were not successful in bagging a pheasant did not have a "trophy" to take home and show their friends and family.

Social learning theory indicates that youngsters come to respond to their own behavior in self-approving and self-critical ways (Bandura 1977). If the young hunters cannot meet their own expectations or the perceived expectations of others, they may consider the experience to be a failure. The experience then becomes negative rather than positive.

In the pheasant hunt the young hunters were placed in a situation where the hunter - not the hunt - was the center of attention and where the youngsters may have perceived that the expectations placed on them were very great. The focus of the hunt became "to shoot a pheasant", not to enjoy all of the elements of the hunt such as the companionship, the autumn colors, the skill, the chase, and other psychological rewards. The likelihood for this experience to provide its full range of potential was thus limited.

Through this discussion, we have intended to provide some insight into the limitations of a 1-time experience, such as the pheasant hunt, relative to the pilot program being developed. The Task Force may be able to use this information as it

develops a program that provides an opportunity for the development of positive hunting values and beliefs.

APPENDIX B: SUMMARY OF PILOT PROGRAM DEVELOPMENT

New York State Department of Environmental Conservation

MEMORANDUM

W: George Mattfeld
J: Brad Griffin
E: "THE FUTURE OF HUNTING IN NEW YORK"
March 9, 1988

The following is my summary of the March 2 committee meeting deliberations. The enumerated categories each contain consensus standards which are intended to recommend the design of subsequent pilot project(s).

I will ask each committee member to notify me of my errors, omissions or additions on or before March 25.

I. GO OR NO GO?

There is a unanimous opinion that we should proceed with design and implementation of a pilot project. There is an underlying common understanding of the problems of recruitment.

II. WHO SHOULD CONDUCT PILOT PROJECT(S)?

- County Sportsmens Federations -

These organizations offer lines of communications to the clubs and club members. The Federations should be initial contacts to develop a sense of "ownership" for subsequent efforts.

- Sportsmens Clubs -

These organizations have the people and facilities needed for carrying out a project. The members have a common sense of organization, identity and camaraderie. They often own the physical facilities of clubhouse, trap and skeet ranges and lands on which to hunt.

- 4-H Shooting Sports -

This program varies widely between counties. In counties where a pilot project might be viewed as complementary, this might provide an excellent medium. In other counties, a pilot project may be viewed as competitive for time, volunteers and resources.

- Shooting Preserve Operators -

This diminishing category could offer a support role where they exist and have an interest.

- Specially designated sportsmen and sportswomen volunteers -

(May be unaffiliated with any club.) Examples include dog owners and trainers, shooting instructors, etc. They may add dimensions of expertness and as role models.

- DEC seasonals hired for the project -

This possibility might have some limited application. It would have the effect of putting "DEC ownership" on the program, for better or for worse.

III. WHO WOULD BE ENROLLED?

Candidates would be drawn on a voluntary basis from student members of Sportsmen Training Courses with prior knowledge and consent of Instructors.

Three age categories are recommended:

- (1) Ages 12 & 13 (Could only hunt legally if a "shooting preserve" was available.)
- (2) Ages 14 & 15 (The focus group)
- (3) Ages 16 to 40 (Only 25% of all attendees have historically exceeded the age of 40.)

The structure of application could be defined as follows:

- Apprenticeship only. (A one day, one time experience, shotgun firing experience and field hunt. Class and film for augmentation only.)
- Apprenticeship with support. (As above plus 3 subsequent hunting experiences afield with a mentor. It may be desirable to pair "apprentices" throughout as an additional support mechanism.)
(Apprentice attendance should require one parent/guardian per pair of ages 12 through 15.)
- Control group - (selected to duplicate ages, etc. for experimental follow-up.)

VII. ADMINISTRATIVE SEQUENCE OF EVENTS

- Pilot design.
- Experimental design.
- Budget and plan for known needs.
- Notice of program to Sportsmens Federations, Clubs, DEC staff, public. (DEC press release should be considered as part of this process.)
- Designation of sponsors, times, places, events.
- Contacts with HEC instructors to set up selection process (April through August is the likely range of existing contact periods statewide.)
- H. E. Courses (August through October. Participants probably should be selected by the end of September.)
- Apprenticeship programs (October).
- Apprenticeship support activities (October-November).

- Survey, interviews, data collection, analysis, etc., publication.
- DEC review and recommendations for further study, action.

VII. WHAT COSTS AND LIABILITIES EXIST AND WHAT SUPPORT IS NEEDED?

- Insurance. Probably needed by volunteer sponsors and attendees.
(This committee cannot expertly comment on the dimension of risk and coverage requirements. Opinion of counsel and fiscal office should be sought to accurately budget and provide.)
- Supplies - i.e., targets, shells . . .
- Rentals - films, videos, dogs and handlers, site for events.
- Contract - Cornell University for experimental design through publication.
- Recognition and support by DEC (including requisite staff time in work plans, CEPP).

VIII. ALTERNATIVES OR ADDITIONAL ACTIONS RECOMMENDED TO ACCOMPLISH GOAL

Each of the three Sportsman's Training Coordinators on this committee strongly and independently expressed the belief that lowering the legal minimum age for small game hunting could do much toward reversing declines in recruitment and maintenance.

It is noted that 12 is the lowest present legal age for HEC attendance and certificate.



Regional Supervisor
Region 7 Natural Resources

BLG:klw

cc: Kurt Armstrong
Judy Ford
Dick Henry
Steve Litwhiler
✓ Jody Enck
Alex Zukovsky
Dave Scudder - Info.